Amendments to the Claims

Claim 1 (Currently Amended): A linear predictive system for a DC-DC converter ~~that generates~~, wherein said DC-DC converter is configured to generate an output signal based on duty cycle ~~and that includes~~, and wherein said DC-DC converter includes a digital compensation block ~~that converts~~ configured to convert a feedback error signal into a main duty cycle signal in a first feedback loop, said linear predictive system comprising:

a linear predictive controller ~~that predicts~~ configured to predict linear changes of ~~the~~ said main duty cycle signal in response to changes ~~of the output signal and that provides~~ in said output signal, and configured to produce a predictive duty cycle signal from said output signal in a second feedback loop, wherein said predictive duty cycle signal is indicative ~~thereof~~ of said linear changes;

a first ~~adder that subtracts~~ combiner configured to subtract said predictive duty cycle signal from ~~the~~ said main duty cycle signal to ~~provide~~ produce a duty cycle delta;

a multiplier ~~that multiplies~~ configured to multiply said duty cycle delta by a gain factor to ~~provide~~ produce a duty cycle delta sample; and

a second ~~adder that adds~~ combiner configured to add said duty cycle delta sample to ~~the~~ said first duty cycle signal to generate an adjusted duty cycle signal.

Claim 2 (Currently Amended): ~~The~~ A linear predictive system ~~of~~ as claimed in claim 1, wherein said gain factor is less than one.

Claim 3 (Currently Amended): ~~The~~ A linear predictive system ~~of~~ as claimed in claim 1, wherein said linear predictive controller ~~performs~~ is configured to perform an inverse function of ~~the~~ said DC-DC converter approximated to ~~the~~ a first order.

Claim 4 (Currently Amended): A DC-DC converter, comprising:

a DC-DC block configured to produce an output signal in response to an adjusted duty cycle signal;

a compensation block ~~that converts a feedback error signal into~~ coupled to said DC-DC block in a first feedback loop, and configured to produce a ~~first~~ duty cycle signal in response to said output signal;

~~a first combiner that adds a duty cycle delta to said first duty cycle signal to generate an adjusted duty cycle signal;~~

~~a DC-DC block that generates an output signal based on said adjusted duty cycle signal;~~

a linear predictive controller ~~that predicts changes of said first duty cycle signal in response to changes of said output signal and that provides~~ coupled to said DC-DC block in a second feedback loop, and configured to produce a predictive duty cycle signal ~~indicative thereof~~ in response to changes in said output signal; and

a ~~second~~ first combiner ~~that subtracts said predictive duty cycle signal from said first duty cycle signal to provide said duty cycle delta~~ coupled to said compensation block, coupled to said linear predictive controller, coupled to said DC-DC block, and configured to produce said adjusted duty cycle signal in response to said duty cycle signal and said predictive duty cycle signal.

Claim 5 (Currently Amended): ~~The~~ A DC-DC converter ~~of claim 4~~ as claimed in claim 13, further comprising a multiplier ~~that multiplies~~ coupled to said second combiner, coupled to said first combiner, and configured to multiply said duty cycle delta by a loop gain factor to ~~provide~~ produce a modified duty cycle delta ~~provided to said first combiner~~;

said first combiner is configured to add said modified duty cycle delta from said duty cycle signal to produce said adjusted duty cycle signal.

Claim 6 (Currently Amended): ~~The~~ A DC-DC converter ~~of~~ as claimed in claim 5, wherein said loop gain factor is between 0 and 1.

Claim 7 (Currently Amended): ~~The~~ A DC-DC converter ~~of~~ as claimed in claim 4, wherein said linear predictive controller ~~performs~~ is configured to perform an inverse function of said DC-DC block approximated to ~~the~~ a first order.

Claim 8 (Currently Amended): ~~The~~ A DC-DC converter ~~of~~ as claimed in claim 4, ~~further comprising a third~~ wherein:

said DC-DC converter additionally comprises a second combiner ~~that subtracts~~ coupled to said DC-DC block, coupled to said compensation block, and configured to subtract said output signal from a reference signal to generate said feedback error signal; and

said compensation block is configured to convert said feedback error signal into said duty cycle signal.

Claim 9 (Currently Amended): A method of operating a DC-DC power converter, comprising:

converting a feedback error signal into a first duty cycle signal in a first feedback loop;

subtracting a duty cycle delta from ~~the~~ said first duty cycle signal to ~~provide~~ produce an adjusted duty cycle signal;

generating an output signal ~~based on the~~ in response to said adjusted duty cycle signal;

linearly predicting changes of duty cycle in response to changes of ~~the~~ said output signal to ~~provide~~ produce a predictive duty cycle in a second feedback loop; and

subtracting ~~the~~ said predictive duty cycle from ~~the~~ said first duty cycle signal to ~~provide the~~ produce said duty cycle delta.

Claim 10 (Currently Amended): ~~The~~ A method ~~of~~ as claimed in claim 9, further comprising multiplying ~~the~~ said duty cycle delta by a loop gain factor.

Claim 11 (Currently Amended): ~~The~~ A method ~~of~~ as claimed in claim 9, wherein said linearly predicting ~~changes of duty cycle~~ activity comprises performing an inverse function of said generating ~~an output signal~~ activity approximated to ~~the~~ a first order.

Claim 12 (Currently Amended): ~~The~~ A method ~~of~~ as claimed in claim 9, further comprising subtracting ~~the~~ said output

signal from a reference signal to ~~provide the~~ produce said feedback error signal.

Claim 13 (New): A DC-DC converter as claimed in claim 4 wherein:

said linear predictive controller is configured to produce said predictive duty cycle signal from said output signal, wherein said predictive duty cycle signal is indicative of said changes of said output signal;

said DC-DC converter additionally comprises a second combiner coupled to said linear predictive controller and configured to subtract said predictive duty cycle signal from said first duty cycle signal to produce a duty cycle delta; and

said first combiner is configured to produce said adjusted duty cycle signal in response to said duty cycle signal and said duty cycle delta.